

AMENDMENTS TO THE DRAWINGS

Replacement Figure 12

Attachment: Annotated Sheet(67 of 87)
Replacement Sheet(67 of 87)

REMARKS

Claims 3-7, 15-17, 51 and 215-218 are all the claims pending in the application.

Claims 3, 15 and 215-218 are amended to particularly point out and distinctly claim the subject matter of the presently claimed invention.

No new matter is added.

Entry of the amendment is respectfully requested.

I. Response to Rejection under 35 U.S.C. § 112

Claims 3-7, 15-17, 51 and 215-218 are rejected under 35 U.S.C. §112, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Specifically, the Examiner asserts that it is unclear and confusing as to what is meant by “a first silicon-diffused metal layer.”

Applicants respectfully submit that upon entry of the present amendment, claims 3, 15 and 215-218 will satisfy the requirements of 35 U.S.C. §112, second paragraph. Applicants therefore request reconsideration and withdrawal of the §112 rejection of claims 3-7, 15-17, 51 and 215-218.

II. Response to Rejection under 35 U.S.C. § 102

Claims 3-7, 15-17, 51 and 215-218 are rejected under 35 U.S.C. §102(e) as being anticipated by Noguchi Junji et al. (Japanese Patent Application No. 2003-347299, hereafter “Noguchi I”).

Applicants respectfully submit that Noguchi I is a foreign reference, *i.e.*, a Japanese patent application. Therefore, the invention of Noguchi I was not described in - (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for

patent by another filed in the United States before the invention by the applicant for patent. Furthermore, Noguchi I is not a PCT application designated the United States and was not published in the English language.

In view of the above, Applicants respectfully submit that Noguchi I is not a reference under §102(e), and therefore request reconsideration and withdrawal of the §102(e) rejection.

III. Response to Rejections under 35 U.S.C. § 103

A. Claims 3-7, 15-17, 51 and 215-218, are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Noguchi in view of Noguchi Junji et al. (Japanese Patent Application No. 2001-291720, hereafter “Noguchi II”).

Applicants respectfully submit that the disclosures of the priority document Japanese Patent Application No. 2002-302841 dated October 17, 2002 provides support for claims 3-7, 15-17, 51 and 215-218. A verified English translation of the priority document JP 2002-302841 is submitted herewith, thereby perfecting priority over Noguchi I, published on May 12, 2003, and obviating the §103 rejection of the present claims based on Noguchi I in view of Noguchi II.

In view of the above, Applicants respectfully request reconsideration and withdrawal of the above mentioned §103 rejection.

B. Claims 3-7, 15-17, 51 and 215-218 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Toshinoro et al. (Japanese Patent Application No. 2000-150517) in view of Sekiguchi Mitsuru (Japanese Patent Application No. 2000-058544).

The invention as presently claimed is a semiconductor device comprising an insulating underlayer, an insulating interlayer formed on the insulating underlayer with grooves in the insulating interlayer, a metal layer having silicon atoms diffused within the metal layer, and a

metal diffusion barrier layer formed on the silicon-diffused metal layer and the insulating interlayer.

At the paragraph bridging pages 7 and 8, the Examiner asserts that silicon diffuses into the copper wiring during the formation of the silicide layer, and therefore, it must be concluded that this results in a silicon-diffused metal layer of the presently claimed invention.

Applicants respectfully submit that while Toshinoro discloses the formation of a silicide layer, the reference does not disclose a metal layer with silicon atoms diffused within the said metal layer. Formation of the silicide layer implies that Si-Cu bonds are formed in the copper-silicide layer. However, this does not result in individual silicon atoms being present within the copper layer.

Furthermore, the metal layer having silicon atoms diffused within the layer, as presently claimed, never includes a metal silicide layer. As illustrated in the Cu-Si phase diagram of Fig. 7 of the present specification, if the ratio of silicon to copper is less than 8/92, no copper silicide is generated. See page 18, lines 26-29. Mitsuru discloses the difficulty in forming a silicon-diffused copper film having a silicon component of less than 8%, and only discloses a Cu connection (coring layer) having a silicide layer on its surface.

In view of the above, Applicants respectfully submit that a person of ordinary skill would not be motivated to combine Toshinoro with Mitsuru to arrive at the presently claimed invention with a reasonable expectation of success. Therefore, reconsideration and withdrawal of the §103 rejection is respectfully requested.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

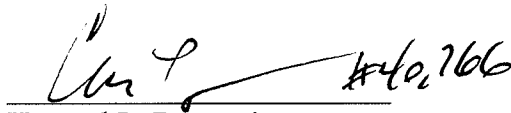
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